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# USSR Report

CONSTRUCTION AND RELATED INDUSTRIES

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## USSR REPORT

### CONSTRUCTION AND RELATED INDUSTRIES

#### CONTENTS

##### CONSTRUCTION PLANNING AND ECONOMICS

- Credit Policy for Residential Construction Revised  
(BYULLETEN' NORMATIVNYKH AKTOV MINISTERSTV I VEDOMSTV,  
No 9, Sep 84)..... 1
- New Estimation Procedures for Capital Reconstruction Plans  
(EKONOMICHESKAYA GAZETA, No 38, Sep 84)..... 9
- Plan Underfulfillment in School Construction Deplored  
(V. Lysenko; SOVETSKAYA ROSSIYA, 22 Nov 84)..... 16
- Problems With Construction Management Reorganization Schemes  
(V. Kazanavichyus; PRAVDA, 7 Jan 85)..... 20

##### INDUSTRIAL CONSTRUCTION

- Gosstroy Official on New Industrial Construction  
(A. D. Deminov; EKONOMICHESKAYA GAZETA, No 1, Jan 85)..... 24

##### AGRICULTURAL CONSTRUCTION

- Plan Figures for Rural Construction Reviewed  
(SEL'SKOYE STROITEL'STVO, No 9, Sep 84)..... 30

##### CONSTRUCTION METHODS AND MATERIALS

- State of USSR Cement Production Technology Surveyed  
(G. Ye. Leyfman; TSEMENT, No 8, Aug 84)..... 34

## CONSTRUCTION PLANNING AND ECONOMICS

### CREDIT POLICY FOR RESIDENTIAL CONSTRUCTION REVISED

Moscow BYULLETEN' NORMATIVNYKH AKTOV MINISTERSTV I VEDOMSTV in Russian No 9,  
Sep 84 pp 11-17

[Abstract of USSR Gosbank Letter No 524 dated 17 Jan 1983: "Concerning Housing Construction Cooperation"]

[Text] The USSR Council of Ministers approved decree No. 765 "Concerning Housing Construction Cooperation" on 19 August 1982. In connection with this the USSR State Bank Board codified the existing normative directives concerning credit and accounting relationships with housing construction cooperatives.

The USSR State Bank Board advises offices, departments and agencies of the USSR State Bank to implement and use the USSR Council of Ministers' decree No. 765 "Concerning Housing Construction Cooperation" dated 19 August 1982 as a guideline.

1. Financing the construction of housing units with outbuildings for rural housing construction cooperatives is done only after the cooperatives deposit personal funds amounting to no less than 30 percent of the estimated cost of building the housing unit in a USSR State Bank institution before the start of construction and after bank credit has been obtained by the cooperative according to the established procedure; in Kazakh SSR, Siberia, the Far East, in regions of the Far North, and in places similar to regions of the Far North it is to be in the amount of 20 percent of the estimated cost of building the housing unit.
2. In order to keep records of the personal funds intended to finance the construction of housing units a personal account is opened in the State Bank institution as a balance account No. 745 "Other Special Funds for Providing Long Term Credit to the National Economy" for each rural housing construction cooperative upon application at the same time as the current account.
3. Provide housing construction cooperatives and organizations in inhabited rural areas with credit to build housing units in the amount of up to 70 percent and in Kazakh SSR, Siberia, the Far East, in regions of the Far North, in regions similar to the Far North, and also in mining villages up to 80 percent of the estimated cost of building the housing unit for a term of 25 years with equal portions paid off each year.

Credit will be provided for expenses to build cooperative housing units with outbuildings under the condition that the expenditures for erecting the outbuildings are specified in the design and the summary estimate calculations of the cost of building the housing units.

Loans for building housing units with outbuildings are issued to rural housing construction cooperatives within the limits specified for this purpose in the USSR State Bank plan for long term credit.

Loans that are issued are credited to the personal accounts that are opened as a balance account No. 779 "Long-Term Loans Issued to Enterprises and Organizations by Means of Their Own Funds for Individual Borrowers."

In order to register for financing the design and research work housing construction cooperatives present the bank estimates approved by a general meeting of the members of the cooperative for this work, contracts with design organizations,\* and also documents specified by land and water use regulations.

After reviewing the documents that have been presented the USSR State Bank institution checks that the conditions specified in item 8 (second paragraph) in the USSR State Bank instructions No. 19 dated 14 December 1978 concerning the transfer of the appropriate payroll fund to the design organizations are observed.

5. Financing design and research work for cooperative housing construction is done according to the procedure established in the USSR State Bank instructions No. 19 dated 14 December 1978 by means of the personal funds of the housing construction cooperatives without granting long term credit.

6. Financing and credit to rural housing construction cooperatives is to be done when their personal funds are in accounts in a State Bank in the established amount being set aside for the credit limit and after the following documents have been received:

a) a title list for the cooperative housing construction approved by the ispolkom of the soviet of people's deputies;

b) an interior construction title list (appendix No. 1 to the Construction Financing and Credit Regulations), the amount of construction and installation work, and a plan for putting the general floor space that corresponds to the title list into use;

\* If the cost of the design and estimate work comes to 300 rubles or less inclusively the housing construction cooperatives present letters of guarantee instead of the agreement with the design organizations.



- c) the cooperative's agreement with the contractor organizations;
- d) a certificate of approval of the design and estimate documentation by a general meeting of the members of the housing construction cooperative together with an excerpt of the minutes of the general meeting and copies of the summary estimate calculations of the cost of construction.

Along with this, calculations of the cost of an apartment that were made in accordance with directives SN-311-65 concerning designing, building and determining the cost of cooperative housing units and apartments and directives SN-6-71 concerning the breakdown of expenditures and the procedure of allocating them to the estimated cost of housing construction must be included in the summary estimate calculations for the typical designs for the housing units intended to be cooperatively built;

- e) permission by a state architectural construction control agency to do the work;

- f) the cooperatives total obligations statement form 04058055 for building housing units which includes interest-free loans granted to participants in the Patriotic War and their wives (husbands).

The housing construction cooperatives also present the lists of borrowers form 04058101 for these members indicating in them the numbers that are certified as participants in the Patriotic War, by whom and when they were issued. In the instances where credit is obtained by wives (husbands) of participants in the Patriotic War notarized copies of marriage certificates are enclosed with this list.

The obligations of the members of the housing construction cooperative form 04058073 is presented with the obligations statement to be checked for the validity of its registration which is then returned to the cooperative.

7. If the function of client is fulfilled by enterprises, organizations, kolkhozes, other cooperative or public organizations,\* or OKSs [capital construction departments] (UKSs) [capital construction administrations] of ispolkoms of soviets of people's deputies through which the housing construction cooperatives were organized, the agreement between the housing construction cooperative and management or OKS (UKS) concerning the transfer of the aforesaid function of client for the design and construction of a housing unit (housing units) is presented to the State Bank institution instead of the documents listed above in accordance with the typical agreement between a housing construction cooperative and a capital construction administration (department) under an ispolkom of a soviet of people's deputies that are in force in the republic. At the same time it must be specified in the aforesaid agreement that the housing construction cooperative grants management or OKS (UKS) the right to accept invoices for work completed to design and build a housing unit (housing units) according to the established procedure with payment for this work from the cooperative's personal funds and

\* Hereafter called management.

State Bank credit. In this case the documents indicated in item 4 and in letters "a", "b", and "c" of item 6 of this letter are signed by management's administrator, the OKS (UKS) chief or his deputy. At the same time the excerpt of the minutes of the general meeting of the members of the cooperative concerning approval of the design and estimate documentation need not be presented if these data (number and date of the minutes, approved estimated cost) are specified in the aforesaid agreement.

When the function of client is fulfilled by management, or OKSs (UKSs) of soviets of people's deputies financing and credit operations for cooperative housing construction are done from the personal accounts that were opened for the housing construction cooperatives as balance accounts No. 745 and 779 from which the invoices from design and construction organizations that have been accepted in accordance with the aforesaid typical agreement are paid. Along with this the invoices must be authorized by a management administrator, the OKS (UKS) chief, or the chief bookkeeper, and signed by the appropriate responsible people in the housing construction cooperatives according to the established procedure.

8. Financing and credit for the expenses of rural housing construction cooperatives to build housing units with outbuildings are accomplished in accordance with the regulations for construction financing and credit.

9. The clients' transactions with design and construction organizations for the completed work to design and build cooperative housing units are conducted in accordance with instructions No. 2 dated 31 May 1979 "Concerning Non-Cash Transactions in the National Economy" (with the subsequent changes and addendums).

Invoices for completed work to design and build cooperative housing units are accepted for payment by the operations worker of the State Bank Institution after the credit worker checks the factual nature of the completed operations and with a signature of permission by the latter concerning payment of these invoices.

10. Payment of work for upgraded finish work in apartments and for installing more modern equipment in cooperative housing units is made by State Bank institutions by means of the housing construction cooperatives' own fund at one time after all of this work has been completed under the condition that copies of the additional estimates are presented by them to the bank (without reapproval of the estimated cost of building the housing units), as well as permission by the union republic Gosstroy to do the aforesaid work and the additional contractual agreement with the contractor organization. Along with this the cooperative's personal funds must be deposited in their personal accounts at the State Bank institutions before the aforesaid work is begun.

11. When paying invoices, the the USSR State Bank institution must maintain control to ensure that these invoices do not include expenses for utility structures and lines that are outside the apartment, facilities for enterprises and trade institutions, public eating, cultural, or consumer services for the population or other facilities for public purposes, keeping

in mind that work associated with constructing built-in (built-on) facilities for these enterprises and institutions in cooperative housing units must be paid for by means of capital investments that are allocated by the appropriate state and cooperative enterprises and organizations while debiting the enterprises' (organizations') balance for the cost of the aforesaid work after construction of the housing unit has been completed.

12. Final settlement with the contractor for the completed work to build the cooperative housing unit is made within the limits of the balance of the estimated cost of building the housing unit after presenting a copy of the act of the state acceptance commission approved according to the established procedure to the the USSR State Bank institution.

Funds for giving bonuses to their workers for putting housing construction cooperatives' housing units into operation may be transferred to the construction contractor organizations according to the established procedure upon request of the client.

When this is done the funds for paying out bonuses are included in summary estimated calculations of the cost of building housing units with the approval of the cooperatives.

13. After construction of the cooperative housing units has been completed the liabilities for the loans that have been granted are registered by the fixed obligations form 04058074. Housing construction cooperatives present the bank with separate fixed obligations on the same form for interest-free loans granted to participants in the Patriotic War or their wives (husbands).

Payment of the loan is made by the cooperative quarterly in equal installments beginning with the quarter following the quarter in which the act of the state acceptance commission was signed to accept the housing unit for use.

A transfer of funds to meet the regular payments on the loan is made directly by a monetary assignment by the housing construction cooperative from its current account opened at the USSR State Bank institution.

14. Payments on the loan are made by members of the housing construction cooperative every month in an amount no less than one third of the total quarterly payment indicated in the obligations form to the cooperative's cashier from available cash or transferred through an enterprise connection. Members of the cooperative may also make payments on the loan through state workers' savings bank cashiers according to the established procedure.

A member of a housing construction cooperative may also give the administration (kolkhoz management) at his place of work a request to withhold the payments every month from his wages (monetary portion of the payment for the labor of kolkhoz workers) for the loans received and that they be transferred to the cooperative's current account using the enclosed form.\*

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\* The enclosure is not included in the BYULLETEN'--editor's note.



The available cash that is received by the cooperative's cashier from its members to pay off the loan is deposited in the State Bank institution by the cooperative within three days time and credited directly as payment on the loan.

15. When payments are not made on the loan within the established period of time the unpaid sum of the housing construction cooperatives obligations is withdrawn from the cooperative's current account according to the delinquent procedure that is at the bank institution administrator's disposal, and in the event that funds are not available in the aforesaid account it transfers to a balance account No. 780 "Overdue Indebtedness on Long-Term Loans" and is recovered to the degree that funds come into the current account.

The State Bank institution must check whether appropriate actuating documents to recover overdue payments from the members of the cooperative have been initiated at housing construction cooperatives that permit overdue indebtedness on loans beyond six months.

16. Rendering uncompensated material assistance to members of housing construction cooperatives by means of material incentive funds and funds for social and cultural measures and housing construction and a partial payment of the credit given to the workers of enterprises, organizations and institutions through the use of these funds is done according to the procedure established in the instructions from the USSR Ministry of Finance, the USSR State Planning Committee, the USSR Committee for Labor and Social Problems, the USSR State Bank, the USSR Construction Bank, and the VTsSPS [All-Union Central Council of Trade Unions] dated March 12 1980, No. 45.

The funds allocated by enterprises, organizations and institutions from material incentive funds and funds for social and cultural measures and housing construction for the aforesaid purposes are transferred as monetary assignments by them to the appropriate account indicating it as personal funds or as payment on the housing construction cooperative's loan.

Based on these monetary assignments the State Bank institution reduces the amount of the quarterly payments of the cooperative's fixed obligation. At the same time the kolkhozes, enterprises, organizations, and institutions send certificates to the housing construction cooperatives indicating the last name, first name, and patronymic of the worker (kolkhoz worker) who is a member of the cooperative and the amount of assistance that is rendered.

Housing construction cooperatives register the obligations of the members of the cooperative once a month indicating the material assistance that has been rendered to them. The new amounts of payments on loans that have to be made by cooperatives and their members while the previously established period of repayment has been kept are indicated on insets 04058067.

17. The obligations statement and fixed obligations of housing construction cooperatives together with the insets are kept at a safe deposit bank while all the remaining documents that serve as the basis for granting the

cooperatives credit are kept by the workers involved in the affairs that were initiated for the cooperatives.

18. Housing construction cooperatives pay 0.5 percent annually, and 3 percent annually for overdue loans for the period of time that the loan was in arrears, for loans to build cooperative housing units. The interest is charged once per quarter and withdrawn from the current accounts of the cooperatives. At the same time it should be kept in mind that the persons indicated in item 15 of USSR Council of Ministers decree No. 765 dated 19 August 1982 are freed from paying the interest on the loan.

Keeping records of the loans issued to rural housing construction cooperatives and also charging and withdrawing interest charges on them is done according to the procedure established by the USSR State Bank Instructions No. 12 dated 21 November 1980.

19. The State Bank has the right to defer payments on loans that are made to build cooperative housing units for the management of housing construction cooperatives that are administered by republic, kray, and oblast offices for that part of the loan that cannot be paid in connection with a member of the cooperative being called to active military service for a period of up to five years without changing the final date for paying off the loan. New payment periods are indicated in inset 04058067.

20. Technical oversight by the client over construction of the cooperative housing units is done according to the procedure established for state housing construction and can be done by the cooperative itself or by management or OKS (UKS) at the request of the cooperative.

The client's technical oversight agency is maintained by means of funds that are specified in accordance with existing standards in the approved summary estimate calculations of the cost of building cooperative housing units.

21. USSR State Bank institutions must exercise continuous control over the pace of building the cooperative housing units, that the plans for putting general (usable) floor space into use are being met by the rural housing construction cooperatives, and in the instances required, must make suggestions to the local soviet and party organizations for developing this construction on a broader scale.

22. Financing capital repairs on cooperative housing units is done from the current accounts of the housing construction cooperatives under the control of their auditing commissions in accordance with the model charters for housing construction cooperatives approved by the union republic councils of ministers. Design and estimate documentation to do repair work is approved at a general meeting of the members of the cooperative.

\* \* \*

Upon publication of this letter the following are no longer in force:

Paragraph 3 on page 1 of Letter No. 1141 dated 18 May 1963 from the USSR State Bank Board;

Item 5 on pages 4 and 5 of Letter No. 1669 dated 25 November 1967 from the USSR State Bank Board;

Letter No. 2534 dated 28 December 1977 from the USSR State Bank Board;

Letter No. 230 dated 2 October 1979 from the USSR State Bank Board;

Letters No. 173, 314, and 226 from the USSR Ministry of Finance, the USSR State Bank, and the USSR Construction Bank dated 31 October 1980 for those parts related to the USSR State Bank.

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## CONSTRUCTION PLANNING AND ECONOMICS

### NEW ESTIMATION PROCEDURES FOR CAPITAL RECONSTRUCTION PLANS

Moscow EKONOMICHESKAYA GAZETA in Russian No. 38, Sep 84 p 16

[Article: "Using Coordinated Estimates; The Procedure For Drawing Up Design and Estimate Documentation to Reconstruct or Technically Retool Enterprises"]

[Text] In accordance with the CPSU Central Committee and USSR Council of Ministers decree "Concerning an Improvement in Planning, Organizing and Managing Capital Construction" the USSR State Committee for Construction Affairs in agreement with the USSR State Planning Committee has approved a System for Drawing Up Design and Estimate Documentation for the Reconstruction and Technical Retooling of Operating Enterprises (Letter No. 46-D dated 22 Aug 1984). The text of this document is published below.

#### 1. General Conditions

1.1 The design of projects that are to undergo reconstruction, and in certain instances technical retooling, must be done in accordance with the schemes for developing and locating sectors of the national economy and sectors of industry and the schemes for building up and positioning production forces among the economic regions and union republics which have been approved according to the established procedure.

In addition, design and estimate documentation for reconstruction must be worked out in accordance with the lists of designs to be worked on which have been approved as part of the five-year plans for design and research work, and for large and complex enterprises and structures (and when necessary for other projects as well) which have been determined by the USSR State Planning Committee and the USSR State Committee for Construction Affairs it must also be done on the basis of technical and economic justifications (TEO) that support the economic expediency and economic necessity of their being reconstructed when the plan designs are drawn up.

Design and estimate documentation for the technical retooling of operating enterprises is worked out in accordance with the approved five-year plans for the technical retooling of operating production associations (combines) and enterprises.



When planning design and research work and working out schemes for developing and locating sectors of the national economy and industries, TEO and design and estimate documentation must be governed by the concepts for reconstructing and technically retooling operating enterprises which were set down in the letters from the USSR State Planning Committee, the USSR State Committee for Construction Affairs, the USSR State Bank, and the USSR TsSU [Central Statistical Administration] dated 8 May 1984, No. NB-36-D, No. 23-D, No. 144, and No. 6-14.

1.2 Design and estimate documentation for the reconstruction and technical retooling of operating enterprises, individual projects or types of work must be worked out in accordance with the requirements in the Instructions Concerning the Make-up and Procedure for Drawing Up, Coordinating and Approving Design and Estimate Documentation to Build Enterprises, Buildings and Structures (SN 208-81)\*, sector instructions that have been confirmed by the USSR State Committee for Construction Affairs, and the directions in this letter.

1.3 The assignments for designing the projects that are to undergo reconstruction and technical retooling are drawn up by the clients for the projects while enlisting general designers, specialized subcontractor design organizations and general contractor construction organizations where necessary.

At the same time the primary technical and economic indicators that are given in the lists of designs being worked on must be indicated in the design work assignments for the enterprises being reconstructed, and for projects that are to undergo technical retooling indicators must be given that were determined in accordance with Methodological Directions for Working Out Plans to Technically Retool Operating Production Associations (Combines), and Enterprises which were approved by the USSR State Planning Committee decree No. 63 dated 23 Mar 1984.

When preparing the design work assignments the clients for the projects with the participation of the design organizations and, in the instances required, the contractor construction organizations, do technical research on operating production processes and structural components in buildings and structures.

1.4 In order to work out designs for the reconstruction and, where necessary, for the technical retooling of operating enterprises it must be specified that engineering research be conducted having the content and in the amount established by the requirements in the all-union normative documents.

## 2. Procedure for Drawing Up Design Documentation

2.1 Design and estimate documentation to reconstruct enterprises is worked out in accordance with the design work assignments:

in one stage--the working design with the summary estimate calculations for the cost--for technically uncomplicated projects;

in two stages--the design with the summary estimate calculations of the cost and the working documentation with estimates--for other projects including those that are large and complex.

Reconstruction of operating enterprises that have a duration of construction that exceeds two years must be done, as a rule, in phases while the design and estimate documentation is worked out according to the procedure established in paragraph 1.7 of Instructions SN 202-81.\*

Designing such projects without dividing them into phases is permissible in exceptional circumstances based on the technological production conditions or due to other specific factors. The decision to design reconstruction projects without dividing them into phases is made by USSR departments and ministries and union republic councils of ministers when including them in the lists of projects to be worked on according to the established procedure.

2.2 In those instances when the design work assignments specify that capacities at individual starting complexes be put into operation, design studies with the necessary calculations are made in the designs (working designs) for the enterprises and the make-up of the structures and the cost of construction is determined for each starting complex as established by letters No. 18-D and No. BL-26-D from the USSR State Committee for Construction Affairs and the USSR State Planning Committee dated 13 Apr 1984.

2.3 Along with the assignments to design the reconstruction of enterprises clients give the design organizations:

the necessary materials and documents specified in paragraph 3.6 of Instructions SN 202-81\*; conclusions about the results of the research on operating production processes and structural components in buildings and structures; data concerning the possible duration of stopping individual production processes (shops) and sections for the period that the construction and installation work takes place; information concerning the sequence of dismantling and transferring operating mechanical and utility lines and the locations and conditions where temporary utility lines will be turned on; a list of transport and hoisting means that are available to the construction and installation organizations; a list of buildings, structures and facilities that can be used during the period of construction; data on the rate at which construction and installation work is to be done on operating production processes (the number of shifts, the schedule and duration of production, the work stoppage); information concerning the conditions for organizing the delivery of construction cargo and for construction mechanism movement, the conditions for organizing all-inclusive deliveries of complex technological equipment that are single (individual) orders; areas where building materials and components can be stored; the conditions for locating temporary stock-pile building and structures during the period of construction.

2.4 The designs for reconstructing enterprises are drawn up to consist of the following sections: a general explanatory note with measures to protect the environment; technological approaches; structural approaches;

construction organization; civil and housing construction; estimate documentation; design certificate.

The content of the design sections, the make-up of the estimate documentation, text and graphic materials are determined in accordance with the requirements of Instructions SN-202-81\* (see paragraphs 4.4 and 4.18) and sector normative documents on questions of construction planning that reflect the specific features of the sectors which are approved in accordance with the USSR State Committee for Construction Affairs.

2.5 The working designs for reconstructing enterprises are drawn up to contain the following sections: a general explanatory note with measures to protect the environment; structural approaches; construction organization; estimate documentation; design certificate.

The content of the working design sections, the make-up of the estimate documentation, text and graphic materials are determined in accordance with the requirements of Instructions SN-202-81\* (see paragraphs 4.8 and 4.18) and sector normative documents on questions of construction planning that reflect the specific features of the sectors which are approved in accordance with the USSR State Committee for Construction Affairs.

2.6 Design and estimate documentation for the technical retooling individual projects (production processes) and types of work is worked out as a rule in one phase.\*

The working design for technical retooling must include: an explanatory note; the summary estimate calculations of the cost; working documentation for the entire amount of construction and installation work specified by the design (see paragraph 4.9 SN 202-81).\*

2.7 Working documentation for the reconstruction and technical retooling of enterprises is worked out in accordance with the requirements of paragraphs 4.10 and 4.11 of Instructions SN 202-81\* and state standards for the design documentation system for construction (SPDS).

By agreement with the contractor organization working documentation for the technical retooling of projects or to do types of work can be worked out in an abbreviated amount and content, while in individual instances it is permissible (when research is conducted on operating production processes and structural components) to compile just the reports that make up the list and the amounts of construction and installation work that is intended to be done to determine the estimated cost of the proposed technical retooling.

### 3. Procedure for Drawing Up Estimate Documentation

3.1 In order to determine the estimated cost of the reconstruction and technical retooling of operating enterprises estimate documentation is drawn up as established by paragraph 4.18 of Instructions SN 202-81.\*

3.2 The following estimate documentation is drawn up to carry out the work to reconstruct operating enterprises:

a) in the design (with a two-phase design):

summary estimate calculations;

a summary of expenses;

average and local estimate calculations;

estimates for design and research work;

b) in working documentation (with a two-phase design): average and local estimates;

c) in the working design (with a one-phase design):

summary estimate calculations;

a summary of expenses;

average and local estimates; or average and local estimate calculations (for projects having a duration of construction exceeding two years);

estimates for design and research work.

In addition, at the same time that the above estimate documentation is drawn up the following must be included in:

the design and working design--a report of the estimated cost of building the projects that make up a starting complex;

the working documentation (with a two-phase design) and working design for technical retooling--a report of the estimated cost of building the projects that make up the starting complex and a report of the estimated cost of construction commodity production.

3.3 In order to determine the estimated cost of work for the technical retooling of individual projects (production processes) and types of work the following documentation is drawn up in the working design:

summary estimate calculations;

average and local estimates;

estimates for design work.

In addition a report of the estimated cost of construction commodity production is worked out as a part of the working design at the same time as the estimate documentation.



The estimated cost of technical retooling with a two-phase design is determined on the basis of the estimate documentation as given in subparagraph "a" of paragraph 3.2 of this letter.

3.4 The estimated cost of reconstruction and technical retooling must be determined by taking into consideration realistic conditions and the characteristics of producing the construction and installation work:

in summary estimate calculations (with a two-phase design or a one-phase design for structures that will take longer than two years to complete)--based on combined estimate standards (current price lists, combined estimate norms, or combined values), combined indicators for the cost of construction (UPSS), and cost indicators for similar projects;

in summary estimate calculations for the reconstruction of enterprises (with a one-phase design for structures that will take up to two years to complete), and also when technically retooling projects--based on estimates compiled according to the working drawings by using current price lists that are intended for this purpose, combined estimate norms, and combined values, while for projects intended for auxiliary and service purposes it is to be based on estimates for typical and repeatedly used economical individual designs that are associated with the local building conditions.

In the event that the above combined estimate standards are not available when compiling the estimates based on the working drawings unified regional unit values (ERER) for structural components and work and values for the installation of equipment are used and individual unit values for construction and installation work (when necessary combined in a catalogue), calculations for the estimated cost of materials, components and parts, and also calculations for transportation expenses are worked out and additionally included in the contents of the estimate documentation. The basis for working out such values is the research acts on operating production processes and structural components that are compiled by construction projects (types of work) and that establish the kind of work whose cost is determined by the individual values. The acts are signed by the representatives of the client, the general contractor, and the general design organization and, after approval by the administrator of the enterprise that is the client, is given to the design organization for compiling the estimates at the same time as the design assignment.

Individual unit values must be worked out according to forms No. 10 and 11 as specified in the Methodological Directions for Determining the Cost of Building Enterprises, Buildings and Structures and for Compiling Summary Estimate Calculations and Estimates (2nd edition, corrected and amended) and in accordance with the Methodological Directions for Working Out Component Estimate Norms for Structural Components and Types of Work and the Methodological Directions for Working Out Values to Install Equipment.

In those cases where the volumes of construction and installation work for technical retooling are determined by conducting research on existing

production processes and structural components based on the reports approved by the executor of the work according to the procedure established in paragraph 2.7 of this letter, the estimated cost of this work is determined on the basis of the above reports.

3.5 The estimated cost of the equipment used for the reconstruction and technical retooling of enterprises in the average and local estimates and estimate values must be determined in accordance with paragraphs 2.37, 2.38 and 2.50 of the Methodological Directions for Determining the Cost of Building Enterprises, Buildings and Structures and for Compiling Summary Estimate Values and Estimates.

3.6 When determining the estimated cost of the reconstruction and technical retooling of operating enterprises the funds for temporary buildings and structures are included in the estimate documentation in accordance with the framework specified in the section of the design (working design) called "Organization of Construction."

3.7 When compiling local estimates for projects for primary, auxiliary and service purposes a higher coefficient in the range of 10 percent of the cost of the construction and installation work that is done under conditions where the production process (shop, section) is operating and complicates the completion of this work may be added to an estimated cost that has overhead expenses and planned savings where necessary (by considering the factors given in paragraph 2.3 of this letter) as a part of the design (working design) for reconstruction and technical retooling.

The above coefficients must be worked out by the design organization and approved by the client in agreement with the general contractor organization.

The above coefficients are also added to the estimated cost of work that is determined by using individual unit features that take into consideration the realistic conditions and nature of producing it during reconstruction and technical retooling and also the additional expenses of the construction and installation organizations associated with this.

\* In the event that the technical retooling plan specifies the installation of additional equipment and machines, the introduction of automated management and control systems or the use of radio, television and other modern means of managing production in the existing space, the design and estimate documentation for technical retooling can be worked out in two phases--the design with the summary estimate calculations of the cost and the working documentation by a decision of the ministry, department, or union republic council of ministers. When this is done the design is worked out in conformity with the requirements of paragraph 4.4 of SN 202-81\* and by taking into consideration the make-up of the proposed work.

9495

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## CONSTRUCTION PLANNING AND ECONOMICS

### PLAN UNDERFULFILLMENT IN SCHOOL CONSTRUCTION DEPLORED

Moscow SOVETSKAYA ROSSIYA in Russian 22 Nov 84 p 2

[Article by V. Lysenko: "The Disturbing Alarm of Delay"]

[Text] The Presidium of the RSFSR Council of Ministers analyzed the rate of building schools, children's preschool institutions, hospitals and polyclinics during 1984.

A detailed review uncovered an unsatisfactory state of affairs for the Russian Federation as a whole. The plan specifies 2.1 billion rubles from state capital investments and 173 million rubles through means obtained by holding communist Saturday work days to build these projects. After three quarters 1.4 billion and 115.9 million rubles respectively were utilized; that is, the plan was being met at a rate of 67 and 60 percent. October, unfortunately, did not bring any significant change for the better. It was noted that the rates during this month proved to be even noticeably lower than the average monthly volume required to complete the plan. It is no accident, therefore, that the total state funds that were utilized by November amounted to 73 percent and that the funds from communist Saturday work days amounted to 68 percent.

The very same defects in construction that were pointed out by Constantin Ustinovich Chernenko in his speech at a meeting of the CPSU Central Committee Politburo--crash work, poor quality, and the failure to meet plans--are inherent in the operations of many construction organizations for republic social and cultural projects. Perhaps new school construction has proven to be in a somewhat better position. The measures that were taken associated with reforming national education increased attention toward it. As a result the total number of schools that opened their doors for the first time by September 1 amounted to 83 percent of the yearly plan. After 10 months the yearly plan was practically completed based on all sources of financing.

However, there are regions where schools are poorly built and goals are systematically not being met. It must be kept in mind that the number of pupils in the Russian Federation grew by 234,000 while the contingent of students will increase by another 320,000 next year. About 18 percent of the pupils are studying in two, and some places, three shifts.



At the same time, not all schools were put into operation by the beginning of the academic year in the 20 autonomous republics, krais, and oblasts--mainly where students have been least satisfactorily provided with the necessary conditions. For example, 320 schools in Tyumen Oblast were operating in two or three shifts yet the three-quarter plan for putting these projects into operation was only 68 percent completed; it was 44 percent in Penza Oblast, 12 percent in Smolensk Oblast, 15 percent in Tuvin ASSR, and 36 percent in Ivanovo Oblast. Those directly at fault for the large delay in constructing school buildings were named at the meeting of the presidium: the Ministry of Power Machine Building, the Ministry of the Chemical Industry, the Ministry of the Petroleum Industry, and a number of other union ministries and departments. These disruptions not only negatively affect the academic and educational process--to a certain degree they characterize the attitude of the ministries and departments toward implementing the reforms.

The attitude toward building institutions outside of the school especially cannot be tolerated. During the current year only 11 of the 32 projects in the plan have been completed. This is a fundamental question, for the topic concerns the second half of our children's day. This is proper leisure time, developing their creative capabilities and much else.

The construction of preschool institutions is proceeding extremely unsatisfactorily. The capital investment plan for 10 months was only 67 percent complete while the plan for putting projects into operation was only 39 percent complete. The following fact draws attention to itself. The goals set for putting nurseries and kindergartens into operation during the first three quarters by means of funds obtained as a result of holding communist Saturday work days were met in only 19 autonomous republics, krais and oblasts. Not one building was put into operation in 25 territories including Moscow, Astrakhan, and Ryazan Oblasts, and Stavropol' and Khabarovsk Krais. The best attitude of construction organizations toward worker enthusiasm and the great amount of organizational work that is done to attract the masses to participate in the Lenin communist Saturday work days is by no means displayed here.

Satisfying the demands of the population for children's preschool institutions is now a great social problem. Many women would like to but cannot work for there is no one with whom to leave the child and the waiting list for nurseries and kindergartens has continued to grow in recent years. And this with an acute deficit of workers! It should be noted that this deficit is of a chronic nature. The plans for building children's preschool institutions were systematically not met earlier either. Last year alone 92 million rubles allocated for these purposes were not utilized. The presidium of the RSFSR Council of Ministers called such a situation intolerable.

As before, professional and technical schools are being built extremely slowly. Although they, like schools, must be turned over before the start of the academic year, even based on the results of 10 months, facilities for only 21,400 were put into use--less than half the yearly plan. The RSFSR Ministry of Geology, the RSFSR Ministry of Procurement, the RSFSR Ministry of the Construction Materials Industry, the RSFSR Ministry of Food Industry, the



RSFSR Ministry of Consumer Services, and the RSFSR Ministry of the Fuel Industry are systematically permitting delays. There is a paradoxical fact that despite the great need for workers the majority of construction ministries and departments under both union and republic jurisdiction are continually failing to meet the plans for building their own professional and technical schools.

The lag is associated with building medical institutions in the republic. The difficult situation worsened this year. After 10 months 324 million rubles were utilized--63 percent of the annual plan--while 23 percent of the planned hospitals and 40 percent of the out-patient polyclinic institutions were put into operation.

The primary reasons the plans were not met are to a large extent known--little attention by clients and contractors to the construction sites, an insufficient concentration of resources at the starting sites, and a disruption of the work production schedules which in turn leads to turning them over for use unevenly.

Specific facts were mentioned at the presidium meeting. For example, the obstetric building in Rostov-na-Donu was not put into operation. What is the matter? It turns out that the general contractor, the "Rostovgrazhdanstroy" Trust in the USSR Ministry of Construction of Heavy Industry Enterprises, continually did not provide the construction site with the required work force and material and technical resources. Only 25 to 27 people worked here while 200 were required according to the plan. The majority of building is being done with a duration of construction that exceeds the norm. For example, the professional and technical school in Kyakhta in Burvatsk ASSR has been under construction eight years now and the oblast eye hospital in Kemerovo has been under construction for the same length of time.

And how many instances of low quality work and every conceivable type of unfinished work there are! The start-up of a school in Makhachkala was disrupted due to the defects permitted by an organization in the RSFSR Ministry of Housing and Civil Construction when laying the walls. The Bashkirs in Iglino Rayon accepted an academic building for an agricultural professional and technical school from a subdivision in the RSFSR Ministry of Rural Construction that looked more like a peculiar half-finished product--the floors were not finished and the sanitation accessories were not installed. The same ministry put a school into operation in the village of Shmolino in Altay Kray with unfinished work. The USSR Ministry of Construction of Heavy Industry Enterprises managed to turn over an academic building for the professional and technical school at the Cherepovets Metallurgical Combine in such a condition.

Obviously, the main portion of responsibility for such an unsatisfactory situation lies with the construction subdivisions. It should be noted that the relative proportion of social and cultural projects of the total volume of work completed by the five primary union construction ministries and departments comes to just 2.7 percent. Educational, professional and technical education, and health care institution construction that falls

within this "percentage" does not appear to be important at all for some people. The overall plan is covered through other projects. At the Presidium of the RSFSR Council of Ministers they reminded us that the administrators of the USSR Ministry of Construction, the USSR Ministry of Industrial Construction, the Ministry of Construction of Heavy Industry Enterprises, the Ministry of Eastern Construction and the USSR Ministry of Power and Electrification assured us many times that they would change their attitude to such types of construction; however, the situation, unfortunately, is not improving.

A similar lack of attention is characteristic of the administrators of republic construction ministries as well--the Ministry of Housing and Civil Construction and the Russian Kolkhoz Construction Association. The Ministry of Rural Construction exceeded the overall plan yet the situation for social and cultural projects was not at all favorable. A. G. Bykhanov, V. M. Vid'manov, and V. P. Batrakov, department administrators, have promised to decisively reconsider their attitude toward these projects more than once or twice. But specific measures have not followed the words.

Critical remarks were expressed at the presidium meeting addressed toward the RSFSR Ministry of Education, the RSFSR Ministry of Health, the State Professional Education Administration, and a number of ispolkoms of soviets of people's deputies which, despite repeated directions given by the Russian Federation Council of Ministers, are still not giving sufficient attention to the problems of developing and strengthening the material and technical base for public education, professional and technical education, and health care, are controlling the pace of construction poorly, are not doing organizational work to meet the goals, and have relaxed their demands. The personal contacts of administrators of ministries and client-departments with the administrators of construction ministries to solve this or that problem cannot be acknowledged as being adequate.

The Presidium of the RSFSR Council of Ministers committed the ministries and departments in the Russian Federation, the councils of ministers in autonomous republics, kray ispolkoms, and oblast ispolkoms, to review the situation at construction sites and to take additional measures to meet the goals for building schools, children's preschool institutions, professional and technical schools, hospitals, and polyclinics. These projects must first of all be provided with material and technical resources, workers, and equipment. The point is that all officials with whom the responsibility lies for utilizing means and putting projects into operation on time must increase their control to ensure that state and plan discipline is observed.

Not much more than a month remains until the end of the year. The experience of the past year testifies to the fact that much construction and finish work can be completed if serious attention is paid to it, resources are allocated and control is established. The construction of social and cultural projects must be improved significantly.

9495

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## CONSTRUCTION PLANNING AND ECONOMICS

### PROBLEMS WITH CONSTRUCTION MANAGEMENT REORGANIZATION SCHEMES

Moscow PRAVDA in Russian 7 Jan 85 p 2

[Article by V. Kazanavichyus, deputy chairman, LSSR Council of Ministers:  
"Without Limits--A Matter of a Builder's Honor"]

[Text] The workers' letter, entitled "A Word about a Builder's Honor," as published in PRAVDA and approved by the CPSU Central Committee, was discussed with interest not only in groups which are constructing housing but also in those which are erecting industrial facilities. Because, of course, in both cases the labor yield depends, to a large extent, on a person's attitude toward his own work. At the very time when a radical turning-point is being reached in this sector even now--during the concluding year of the five-year plan--it is difficult without an active improvement in the system of construction administration and a strengthening of its production base.

Lithuania now has approximately 200 primary construction-and-installation organizations. Together with the republic's administrative organs, they are restructuring their own work in the spirit of the recent decree of the CPSU Central Committee and the USSR Council of Ministers, "On Improving the Planning, Organization, and Administration of Capital Construction." There has been a very useful experiment according to which the results of sub-divisions' activities have begun to be evaluated by their commercial construction output. The new indicator is stimulating groups to turn facilities over for operation more rapidly, since their material well-being depends on this.

But here too new problems arise. At first we were pleased with the sharp curtailment of unfinished construction. But when it began to drop significantly below the normative level, we became concerned. A too-modest level of construction starts hampers the equal distribution of effort during the course of a year and affects construction for the ensuing years. That is why there has been expressed--and, in my opinion, with complete justification--a proposal to introduce still another mandatory criterion--fulfillment of the plan for construction-and-installation operations on construction projects which are underway and those which are just starting up.



There are also other possibilities for increasing construction efficiency even today. As is known, the brigade-type contract allows us to increase labor productivity and improve work quality, while, at the same time, increasing the wages of the brigades. Now we must give some thought as to how to raise the labor yield of the engineers and technicians, to motivate them more strongly to increase productivity on construction projects and, therefore, likewise to expand the brigade-type contract.

Certain inter-kolkhoz organizations have attempted to make the production managers' earnings directly dependent on the volume of construction and installation. And immediately they all began to request...that the plan be increased. This is something almost unprecedented. But what does it mean? The sub-division performed twice as much work--and so its manager did the work of two persons. Of course, there must be no "game" here by means of increasing the material-intensiveness. If there is no such "game," the foreman's wages can be significantly increased without increasing, at the same time, the total wage fund.

This republic's party organization and government are overcoming the departmental barriers in construction. We have in operation sub-divisions of the Ministry of Construction, Ministry of Rural Construction, and the Inter-Kolkhoz Construction Administration. Each of the departments has developed its own production base. It would seem that this is a good thing. But when we tried to take a deeper look as to how the products, let's say, of reinforced-concrete plants were being distributed, we saw a great deal of mis-management. For example, the trusts under the Ministry of Construction were hauling precast structural components and hollow roofing tiles from Vilnius across the entire republic to the maritime regions, while the organizations under the Ministry of Rural Construction were hauling these same items from the port city of Klaypeda to projects located in the eastern borderlands of Lithuania.

This republic's Gosstroy has been entrusted with the task of developing a rationally efficient scheme for producing and transporting items, to be based not on the departmental principle but rather on the territorial principle. Moreover, they are to proceed from the fact that the optimal hauling radius is up to 120 kilometers. This has required no sort of re-structuring in the operation of the reinforced-concrete plants. To be sure, there were added cares for the workers of this republic's Gosplan. But it is certainly better to have documents doing the traveling rather than thousands of tons of reinforced concrete. All doubts about this innovation were dispelled right away when, thanks to the cessation of hauls meeting each other from opposite directions, the ministries involved began to achieve annual savings ranging up to a million rubles.

Here it is appropriate to explain the following: nobody is attempting to distribute the entire output of the departmental bases. That would hinder the motivation to develop them. But, of course, their capacities are frequently not utilized precisely because of a departmental enclosed circuit. On the other hand, we are not asserting that it is advantageous to sell complete sets of the products of home-building combines to other contracting organizations.

But as soon as we can overcome the barriers of an excessively departmental approach, then possibilities will also open up for greater specialization and selection for this or that organization suitable for work in a given region. Let's say, of the three principal republican construction organizations, the



most powerful and experienced is the Ministry of Construction. Therefore, the basic criterion of its work should not be the "municipal record" but rather the complexity and the large, estimated value of the project under construction. That is why it is precisely this ministry which has taken upon itself the principal portion of erecting large industrial enterprises, as well as schools, hospitals, vocational-technical schools in rayon centers and even on kolkhozes.

To be sure, one "but" arises here. The Ministry of Construction's trusts, in erecting projects in rural localities, also bear certain losses, in the first place, because of increased transport outlays. Therefore, it would be feasible to compensate them for their outlays due to the mobile nature of these operations.

The need to build social types of facilities more rapidly and with a higher level of quality in the rural areas has compelled us to reconsider other questions as well. A lin proceeding from economic factors, particularly with regard to the hauls of building materials, a decision was made to develop a construction base, taking into account the needs of various zones of the republic. For example, Lithuania's eastern and southern regions will be built up with **APARTYEN** HOUSES [in boldface] by the Alitus Experimental DSK [Home-Building Combine], along with the Kapsukas and Vevis enterprises. For the northern rayons we will make prefabricated houses, using claydite-concrete and three-layered panels, at a combine of the Ministry of Rural Construction, the construction of which has been provided for in Panevezhis. The western part of the republic, where, because of climatic conditions, the use of finishing bricks is limited, will become primarily a zone of monolithic, prefabricated construction.

Innovations have also begun to appear in the planning of major projects in the rural areas. Which projects were to be erected within a rayon and by whose efforts previously used to be matters decided by the trusts, the Ministry of Rural Construction, and the republic's Gosplan. Now such questions are in the hands of the RAPO [Rayon Agro-Industrial Association] Councils, the primary construction organization.

Our country is enormous, and the operational conditions of the construction organizations are very diverse. And this must be kept constantly in mind. For example, nobody disputes the fact that the trusts should be the basic link in construction. Such units do exist in the republic, and, by necessity, the specialized sub-divisions are being transferred to them. However, I would like to warn others against being drawn into an excessively mechanical consolidation of trusts.

For example, prior to the merger of the three Vilnius trusts in 1974 they completed projects totaling an amount worth 55 million rubles, while in 1983 the combined Vilniusstroy Trust completed an amount worth only 52 million rubles. Kaunasstroy after its consolidation also reduced its volume of work by an amount worth 6 million rubles. Qualitative indicators were also lowered.

At the same time relatively small contracting organizations have been operating quite successfully in Palanga, Druskininkay, and several other cities of the republic. Obviously, both large and small sub-divisions are needed--again

proceeding from the local conditions. Experience has shown that in Lithuania the maximum annual volume of a trust's operations should not exceed 25--30 million rubles, for primary sub-divisions in cities it can reach as much as 6--7 million rubles, while in rural areas, of course, it should amount to less than this.

We must also take a creative approach to renovating the construction base. There was a time when the foundation of the production base of the general contracting trusts was primarily comprised of plants making reinforced-concrete structural components. The timeliness of precast, reinforced concrete has not declined even today. However, many of these enterprises were built 20--30 years ago; they have become obsolete and worn out.

Should they engage in modernization? In part--this is mandatory. But practical experience has shown that re-tooling and renovating them is not too much cheaper than building new ones. On the other hand, the time has passed since reinforced concrete was regarded as the only building material. Have we not been too timid, too clearly lagging behind the spirit of the times, to adopt metal structural components, plastics, ceramics, and gypsum? All the more so in that converting to metal structural elements simplifies the construction of production facilities, reduces the weight of buildings, the expenditure of cement and energy resources, while increasing labor productivity and standards.

To be sure, the following objections arise immediately: there is a shortage of metal. Granted. But, you know, there is much to be gained by making the transition to monolithic construction. First of all, because its production base costs only half as much as a DSK. Therefore, it is also feasible to develop it in cities and even in rural areas, particularly in those regions where there is a lack of plants engaged in large-panel or sheet-type home construction.

Second, in converting to "monolithic," there will be savings made on materials, especially metal. For example, comparisons of indicators for 12-storey apartment houses built in Vilnius, utilizing various structural solutions, have shown that for installing walls per square meter of housing the monolithic method of construction requires 8.2 kilograms of metal, while the large-panel variant requires 22.3 kilograms. This difference becomes even more impressive when the building height is reduced, while in the case of single-storey construction, which is what we do in the rural areas, metal is not used at all. And so could we not direct the metal saved into metal structural components?

The re-tooling of construction's production base depends, to a large extent, on the efforts of the republic itself. But nor can we manage without the help of the union-level ministries and departments. We still have a severe shortage of new means of lifting and transport, means of small-scale mechanization, and high-quality products made of plastics. It is high time that we created in the country large-scale, specialized plants to turn out metal structural components for building frames, to provide all the Union republics with them, as Goskomsel'khoztekhnika /State Committee for Supply of Production Equipment for Agriculture/ is doing for the construction of hothouse combines.

2384

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## INDUSTRIAL CONSTRUCTION

### GOSSTROY OFFICIAL ON NEW INDUSTRIAL CONSTRUCTION

Moscow EKONOMICHESKAYA GAZETA in Russian No 1, Jan 85, p 11

[Article by A. D. Deminov, first deputy chairman, USSR Gosstroy: "Program of Construction to be Completed During the Last Year of the Five Year Plan"]

[Text] In the past year the country's economic capability has risen substantially. Fixed capital valued at 136 billion rubles was put into operation as a result of state capital investments alone.

Soviet construction workers are to solve still more crucial tasks in the last year of the five-year plan [FYP]. With an increase of 5.5 percent in state capital investments, fixed capital entering operation will increase 7.6 percent over 1984 and reach 146.4 billion rubles. Thus at the end of the FYP the amount of incomplete construction will be reduced almost to norm levels.

The words from the speech of Comrade K. U. Chernenko were received in the labor collectives of construction projects as a combat order: "One of the main problems is capital construction. Here high growth rates, a heavy concentration of resources and better use of materials, machinery and mechanisms are outlined. This gives us reason to hope that the construction workers will be able to stop the practice of crash work, improve quality and begin, finally, to cope with the plan targets."

Fundamental measures aimed at the unconditional introduction of all planned capacities and facilities are provided for in the CPSU Central Committee and USSR Council of Ministers decree passed last year, "On Improving the Planning, Organization and Management of Capital Construction." Their implementation will make it possible to improve substantially the situation in the country's construction projects, raise construction efficiency and reduce the time required to install facilities.

The published map shows the most important construction projects to be completed in the last year of the 11th FYP [map not included].

### IN FUEL AND POWER SYSTEM BRANCHES

More than two-thirds of the increase in electric power in 1985 will be obtained in nuclear and hydroelectric power stations. Power-generating units

with a capacity of one million kilowatts each will enter operation in the Smolensk, Kursk, Balakov (Saratov Oblast) and Zaporozhye AES [nuclear power plants].

It is planned that the ninth unit, with a capacity of 640,000 kilowatts, will be placed under load at the Sayno-Shushenskiy power plant. In Tadjikistan, two 150,000 kilowatt turbines will be powered up at a new Vakhshskiy Series-Baypazinskiy GES [hydroelectric power plant]. In Kirgizia, a 150,000 kilowatt capacity unit at the Tash-Kumyrskiy GES is being readied for operation, as are two 65,000 kilowatt units at the Zhinvali GES in Georgia.

Power-generating units with capacities of 800,000 kilowatts are planned for operation at the Surgut GRES [regional hydroelectric power plant] in Tyumen Oblast and the Perm GRES. Capacities of the Khabarovsk TETs-3 [heat and electric power plant], the Neryungri GRES in Yakutiya, Novoangrensk GRES in Uzbekistan, Mary GRES in Turkmeniya and the Azerbaijan GRES are increasing.

The planned start-up of the 800,000 watt power-generating unit at Berezov GRES-1 in Krasnoyarsk Kray should be particularly noted. The plan will also fix the start of large-scale power development of the unique KATEK [Kuybyshev Automobile and Tractor Electrical Equipment and Carburetor Plant] coal deposits. As is known, the Energy Program provides for building coal strip mines each having a capacity of up to 60 million tons of coal per year and thermal power plants of 6.4 million kilowatts each within the Kansk-Achinsk fuel and energy system. Berezov will be the first in a family of such gigantic GRES. A capacity for mining 4.5 million tons of coal per year is being put into operation simultaneously at the Berezov strip.

A significant increase in capacity is outlined for 1985 in the coal industry, which is to become the main supplier of fuel for thermal electric power. The map designates facilities to be opened: at strips -- Vostochnyy (15 million tons annually) in Ekibastuz; Neryungri (2 million tons) in Yakutiya; Pavlovsk No 1 (1 million tons) in Primor'ye; Angren (700,000 tons) in Uzbekistan; Tal-Yuryakh (300,000 tons) in Magadan Oblast; and at mines -- Yuzhno-Donbass No 3 (1.2 million tons) in Donetsk Oblast; Komsomolets (500,000 tons) in Kemerov; Anadyr (50,000 tons) in Magadan; Aktas (200,000 tons) in Karaganda Oblast and Dolina (200,000 tons) on Sakhalin.

During 1985, main gas pipe line Urengoy-Tsentr II extending 3,113 kilometers; Beyney-Aleksandrov Gay (340 km); Kursk-Kiev (512 km); Kutaisi-Sukhumi (200 km) and condensate pipeline Urengoy-Surgut (755 km) are to enter operation.

The map also shows main oil pipelines and petroleum product pipelines.

Among the facilities of the petroleum and gas refining, petrochemical and chemical industries to be put into operation, the map notes new capacities in catalytic reforming of raw materials and coking of heavy petroleum residues in Lyubertsy in the Moscow area, Lisichansk in Voroshilov Oblast and Novokubyshev; for output of synthetic ammonia and mineral fertilizers in the Tol'yattiazot associations, Azot in Dneprodzerzhinsk and Sera in Rozdol; sulfuric acid in the Krasnodar chemical and Chardzhoy superphosphate factories; calcined soda at the Lisichansk and Crimea soda factories; chemical



fibers and threads in the Novopolotsk Polimir and Svetlogorsk Khimvolokno associations in Belorussia, as well as at the Barnaul synthetic fiber factory. Large-scale production of urea resins is being readied for operation at the Tomsk chemical factory. Capacities for preparation of synthetic rubber and tires will be turned over in Yerevan, Krasnoyarsk, Chimkent and Belaya Tserkva.

#### INDUSTRIAL CAPACITY IS GROWING STRONGER

Metallurgy and machinebuilding facilities are widely represented in the construction program for the final year of the FYP. New capacities at the Kacharsk mining and concentration combine in Kustanay Oblast are calculated to mine 3 million tons of iron ore per year. The gigantic KMA-Lebedin (0.5 million tons), Belgorod and Mikhaylov (1 million tons) mining and concentration combines in Kursk Oblast will be further developed. The capacity of the Krivorozhskiy Central GOK [mining and concentration combine] will increase by 1 million tons as a result of reconstruction and that of the Kaz Mine in Kemerov Oblast by 600,000 tons.

The Nizhnetagil metallurgical combine will complete reconstruction of magnetic concentration factory No 2 for output of approximately 1.3 million tons of iron ore concentrate annually. Production of 530,000 tons of steel annually will occur at the Dal'nevostochniy Metallurgical Factory at Komsomolsk-na-Amure. Capacities are increasing for producing advanced rolled products at the Novolepetsk (220,000 tons), Zhdanov (200,000 tons) and Karaganda (150,000 tons) combines and the Moldavian Metallurgical Factory (100,000 tons) in Rybnits. This small enterprise, using metal scrap formed in the republic, will produce high quality products. A fourth battery for one million tons of coke annually is going into operation in the Altay Coke By-products Factory.

Machinebuilding symbols on the map designate new and reconstructed steam turbines in Leningrad and Kharkov; diesels and diesel-generators in Bryansk; metallurgical and chemical equipment in Sverdlovsk; freight cars in Kremenchug; electric pipe main lines in Novocherkassk; large power machinery in Brezhnev; industrial robots in Cherkassy; oilfield and geological prospecting drilling equipment in Baku; machine tools in Gorkiy, Alma-Ata and Vilnius; instruments for monitoring and adjusting technological processes in Ulan-Ude; instruments for measuring mechanical sizes in Kishinev; trucks in Kutaisi and tractors in Rubtsovsk; combines in Krasnoyarsk and Kherson; agricultural and animal husbandry machinery in Kolomyia (Ivano-Frankovsk Oblast) and Mogilev; technical equipment for the light, food, milk and dairy products and fishing industries in Orsha in Vitebsk Oblast, Krasnoarmeysk in Saratov Oblast and Makhachkala.

In the forestry, wood processing and cellulose and paper industry, 1985 is marked by new capacities for processing wood chip and wood fiber boards in Krasnoyarsk and Primor'ye, Kalinin Oblast; furniture in Leningrad and Makhachkala and paper in Syktyvkar.

Equipping of new and reconstruction of operational enterprises in the construction materials and construction industry and the production base for construction organizations is being completed at the end of the FYP.

This concerns production of cement at the Rezina Factory in Moldavia (1.15 million tons), the Nikolayevsk Cement-mining Combine in Lvov Oblast (650,000 tons), and the Akhangaran Cement Combine in Tashkent Oblast (450,000 tons); slate in the Dushanbe Asbestos and Cement Products Combine (114 million conventional sheets); earthenware facing materials at the Kharkov Brick Factory (700,000 cubic meters); bricks in Irkutsk, Amur and Minsk oblasts, Georgia and Latvia and pre-cast reinforced concrete in Sverdlovsk, Tyumen, Surgut and Astrakhan Oblast.

#### FOR THE PEOPLE'S WELFARE

New and reconstructed light, food and meat and dairy products industry enterprises have modern equipment for manufacture of high quality consumer goods. The map of new construction projects notes branches of the Bukhara Textile Combine in the village of Karakul', where 34,000 textile spindles are being set up, and the city of Dzarkurgan (560 looms). Some 34,000 textile spindles will also appear at a factory in the Karakalpak ASSR city of Beruni and during the year the Tselinograd spinning and thread factory is to put into operation approximately 105,000 spindles.

Hundreds of new looms will be introduced into the textile enterprises in Ufa, the Karakalpak city of Khodzheyli, Bendery in Moldavia, Kara-Balta in Kirgizia, Vani in Georgia, Narva in Estonia and in the Tadjik settlement of Gissar.

The introduction of major capacities for the production of linen in the cities of Khodzhaabad in Andizhan Oblast and Frunze, and hosiery in Dimitrovgrad and Klappeda is outlined.

New production at the 17th Khmel'nitskiy sugar factory is to process 60,000 quintals of beets daily. After reconstruction, the oil extraction factory in Kagan (Bukhara Oblast) will be able to process 100 tons of oil seeds daily. The capacity of the Kalev confectionery factory in Tallin will be significantly enlarged.

With the introduction of new or the reconstruction of operational production the output of fruit preserves in Odessa and Kashkadar'ya oblasts, Alma-Ata and Georgia will be increased.

Equipping of meat-packing plants will be completed in 1985 in Dubno in Rovno Oblast, Mogilev, Dzhezak and Mary. The output of whole milk products in city dairy plants in Astrakhan, Penza, Ordzhonikidze, Sumy, Termez, Gori, Nakhichevan', Tel'shyay, Ura-Tyube and Kafan will expand.

The published map familiarizes one only with the most important industrial facilities being put into operation. In addition, residential and cultural construction is going on in every large and small populated area.

The 1985 Plan includes a number of measures to raise the standard of living of the Soviet people, and most of all to improve housing conditions. Housing

with a total area of 114 million square meters will be built, which is 10.7 million square meters more than was outlined in the FYP for this year.

Particular attention is being paid to the comprehensiveness of development. In 1985 there are to be put into operation schools for 951,000 places and children's pre-school establishments for 630,000 places, hospitals for 60,000 beds and outpatient polyclinic establishments for 116,000 visits per shift. All of this significantly exceeds FYP targets.

#### POULTRY PLANTS, COMPLEXES AND GREENHOUSE COMBINES

With our tremendous scale of construction and economic activity it is no less important to ensure effective measures are taken not only to preserve, but also to improve the environment. Approximately 2.5 billion rubles of state capital investments are being allotted to accomplish a complex of measures in this area.

Construction personnel are making a significant contribution to implementing the country's Food Program, by equipping and reconstructing agricultural production facilities. Among the most important projects being completed in 1985 are the poultry egg plants in Bryansk, Tula, Perm and Chita oblasts, Kirgiziya and Tadjikistan and the poultry meat plants in Belgorod, Andizhan and Severo-Kazakhstan oblasts, Chuvashiya, Azerbaijan, Kirgiziya and Armenia.

Complexes to raise and fatten young cattle will be opened up in the Tavricheskiy Sovkhoz, Omsk Oblast (8,000 head) and the Zarya Sovkhoz, Grodno Oblast (5,000 head). Large swine complexes are planned to be put in operation in Kuybyshev, Arkhangel'sk, Perm, Tyumen and Brest oblasts.

The covered area at poultry combines is being increased in Stavropol and Chuvashiya, the Kostroma, Alma-Ata, Mary and Dzhizak oblasts, Krasnodar and Krasnoyar krays, Latvia and the Komi ASSR.

Among the procurement facilities on the map of projects being completed in 1985 are shown elevators for tens of thousands of tons of simultaneous storage each. They are being completed in the Ryazan, Penza, Zakarpata, Chernigov, Gomel', Khorezm, Sefero-Kazakhstan, Tselinograd, Kurgan-Tyube and Ashkhabad oblasts, Krasnodar and Stavropol krays, Latvia and Estonia.

Mills being readied for operation in Khabarovsk, Rostov-na-Donu, Krasnodar Kray, Vinnitsa, Zhitomir and Grodno oblasts, Kirgizia, Tadzhikistan and Armenia will each process 500-600 tons of grain per day. Huge mixed feed enterprises are being commissioned in Udmurtiya, Khabarovsk, Taldy-Kurgan, and North Kazakhstan oblasts and Latvia.

#### DEVELOPMENT OF THE TRANSPORT SYSTEM

Having opened throughput operational movement of trains along the Baykal-Amur Magistral [BAM] ahead of schedule, the transport construction personnel are preparing to put into permanent operation two major sections of the BAM: the Tynda-Urgal, extending 325 km and the Chara-Tynda, extending 337 km. Entry into permanent operation of lines running Yevlakh-Belokany, Aktogay-Sayak and

Kholmogory-Urengoy is outlined for 1985. On a number of routes second tracks are being laid and electrification is being implemented.

Highly mechanized moorages and transshipment complexes will be introduced in the seaports of Vladivostok, Nakhodka, Petropavlovsk-Kamchatka, Nikolayev and Izmail, the second Vanino-Kholmsk ferry line, as well as the river ports of Vazhina in Leningrad Oblast, Osetrova in Irkutsk Oblast, Krasnoyarsk and at the Kurmenta wharf in Kirgizia.

\* \* \*

The program for project completions in 1985 is very full and it requires from builders, assemblers and operators especially precise coordination and harmonious and well-organized work. At this time the construction collectives are taking on socialist obligations for the last year of the FYP. The timely and ahead-of-schedule putting into operation of all planned capacities and facilities is foreseen as a most important point in these obligations.

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## AGRICULTURAL CONSTRUCTION

### PLAN FIGURES FOR RURAL CONSTRUCTION REVIEWED

Moscow SEL'SKOYE STROITEL'STVO in Russian No 9, Sep 84 p 3

[Article: "The Competition Continues"]

[Text] A report by the RSFSR TsSU [Central Statistical Administration] was published in the central press at the end of July concerning the results of completing the plan for the economic and social development of the RSFSR for the first half of 1984. It noted that a further growth in social production and its efficiency was achieved during the past half year. The welfare of the population improved.

In construction, work continued further to strengthen the production base and improve the organization of construction production while the volume of completely prefabricated construction increased. The erection of buildings from prefabricated modules expanded which made it possible to substantially reduce the length of time to build projects.

Fixed assets that were put into operation by means of state capital investments amounted to 26 billion rubles.

Additional production capacities became operational as a result of building new enterprises and also through the expansion, reconstruction, and technical retooling of operating enterprises.

Capital investments for the agro-industrial complex increased of which more than a third were allocated to agriculture in the Nechernozem zone.

In agriculture, livestock-breeding facilities, mechanized farms, complexes for keeping cattle capable of handling one half million head, facilities for poultry capable of handling 500,000 head, meat-producing poultry factories handling 10.5 million head per year, silo and hay structures with a capacity of 2.9 million cubic meters, elevators, mixed-feed enterprises, and other projects were built.

Housing units with a total floor space of 4.6 million square meters, general education schools for 11,200 pupils, preschool institutions for 18,800 children, and other projects were built by sovkhoses and other state agricultural enterprises and organizations.

Work continued to further strengthen the production base of construction organizations. Labor productivity increased by 2.5 percent.

At the same time a number of construction organizations did not meet the plan for producing consumer goods, contract work volume, labor productivity growth, profits, and for reducing the cost of construction and installation work.

How were the 1984 socialist obligations met, which were taken on by the RSFSR Ministry of Rural Construction (they were published in the April issue of our magazine)?

The RSFSR Ministry of Rural Construction must put 62 large national-economic projects into use by the end of the year. In addition, elevators, mills, mixed-feed plants, enterprises that produce bone meal, seed growing facilities, and feed producing and processing sectors of industry must be put into use, and the goals for building and putting into operation housing units, especially farm-type houses, schools, children's institutions, professional and technical schools, and other projects for social, cultural and everyday purposes must be met.

It was resolved that the output of the basic types of components and parts, precast reinforced concrete, carpentry items, and large panel housing construction components will be substantially increased.

Competition spread to all subdivisions to meet the obligations that were taken on.

The fight to meet a planned increase in labor productivity of 4.8 percent and to increase it by 1 percent above the plan and also to reduce production costs an additional 0.5 percent above the plan is intensifying at all construction sites and construction materials enterprises.

The results of fulfilling the socialist obligations for the half year look like this.

The above-plan indicator for improving labor productivity came to 102 percent for the construction industry and only 96.8 percent for construction. The volume of contract work came to 100.2 percent. The following were put into use (in percent): housing units--109.4 percent, schools--111.8 percent, PTU [professional and technical schools]--100 percent, livestock facilities--147.6 percent, fruit and vegetable storehouses--109.7 percent, grain warehouses--120 percent, large-panel and large-modular housing units in rural areas--104 percent, and children's and preschool institutions--143.7 percent.

At the same time socialist obligations related to a number of indicators were at (in percent): 73.5 percent for the volume of commodity production, 43 percent for using arbolit products in construction, 77 percent for rack floor panels and parquet panels, and 69 percent for glued load-bearing wood components.

Everything is not satisfactory with conserving materials by far. The obligations for this very important indicator were only met for lumber at 103.2 percent and for electric power at 133.5 percent. Substantial shortfalls (57.7 to 97.3 percent) were permitted in a number of areas (diesel fuel, gasoline, rolled ferrous metal, cement, slate, glass, pliant roofing material and others).

It was also reported in the April issue of our magazine that at the beginning of the year the board of the RSFSR Ministry of Rural Construction advocated and approved an initiative by the collectives at the "Orelsel's'troy" and "Krasnoyarsksel's'troytrans" Trusts, the Omsk Rural Housing Construction Combine in the "Omsktselinstroy" Administration, PMK [mobile mechanized column] No. 539 in the "Bashsel's'troy" Administration, the Krasnokamsk Mechanization Administration in the "Permobl'sel's'troy" Administration, the Arzamas ZhBK [reinforced concrete components] Plant, the "Gor'kovobl'sel's'troy" Administration, and a crew at the "Astrakhansel's'troy" Trust led by M. B. Koblovoy that is equipped to do complete jobs. These collectives resolved to foster competition to meet the goals for 1984 ahead of time. The magazine ran articles about their work experiences.

A check showed that the initiators are successfully meeting their increased obligations. At the same time the indicators were lower in a number of areas. For example, the "Orelsel's'troy" Trust failed to meet its obligation by 3 percent of adopting the lump wage payment system in production and by 3.6 percent for the brigade contract system, and the Krasnokamsk UM [Mechanization Administration] failed to meet its obligations for volume of subcontract SMR [construction and installation work] by 48 percent, for the coefficient of interchangeability of mechanisms and for including operators in a crew by 39 percent, and for conserving materials through innovations by 4.9 percent.

The "Krasnoyarsksel's'troytrans" Trust failed to meet the output per worker by 2.4 percent; PMK No. 539 in the "Bashsel's'troy" Administration met the goal for contract work only by 101 percent instead of 115 percent.

Now, on the threshold of the fifth year of the 11th Five-Year Plan, when the score will be tabulated in months, weeks and days, it is especially important to step up the pace and improve the quality of work. The state of affairs dictates that a further improvement in efficiency is necessary.

"It would be right," comrade K. U. Chernenko pointed out, "if every one of us were to refuse to ease up in any way. Concern and even anxiety, if you wish, about the state plan must not stop us for a minute. And let's come to an understanding--accountability for a disruption or for any unfinished work that is permitted this year must be stricter than ever before. Our party position cannot be anything different."

Socialist competition continues. The movement to fittingly greet the important 40th Anniversary of the Soviet people's victory in the Great Patriotic War is gathering steam everywhere in our country, including rural construction sites.

It is a matter of honor for rural construction workers--for each worker to ponder the following thought more deeply--valiant productive work, a high level of organization and discipline, and meeting the obligations that are taken on is not just our civil responsibility but also our patriotic duty.

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## CONSTRUCTION METHODS AND MATERIALS

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### STATE OF USSR CEMENT PRODUCTION TECHNOLOGY SURVEYED

Moscow TSEMENT in Russian No 8, Aug 84 pp 1-4

[Article by G. Ye. Leyfman, chief of the technical division, Glavzapadtsement /Cement Industry for Western Regions Main Administration/: "Make Fuller Utilization of This Sector's Potential"]

[Text] For three and a half years our sector's scientific research institutes have been working on comprehensive, targeted scientific and technical programs. Operational experience has been accumulated under the new conditions of planning and administering scientific and technical progress. This has allowed us to make certain summarizations and draw certain conclusions, to outline paths for further increasing the effectiveness of scientific-research projects, and to strengthen the influence of science on the technical level of cement production in the light of the decree of the CPSU Central Committee and the USSR Council of Ministers, dated 18 August 1983 and entitled "On Measures to Speed Up Scientific and Technical Progress in the National Economy."

For the sector as a whole, 12 scientific and technical, targeted programs are being carried out in this sector; of these, three are state and nine are sectorial. They are devoted to the following most urgent problems: developing and introducing energy-conserving technologies, further mechanization of operations in the auxiliary sections of production, and upgrading product quality.

Work on one state and five sectorial programs is being headed up by NIItsement /Scientific Research Institute of the Cement Industry/, Giprotsement /State Planning and Scientific Research Institute of the Cement Industry/ is responsible for implementing one state and two sectorial programs, and the Southern Giprotsement is heading up those persons carrying out one problem of sectorial importance. The program for cataloging cements, based on a profound study of their structural engineering properties, is being carried out by the sectorial laboratory of the Moscow Highway Institute. The creation and introduction of low-temperature (saline) technology for alinite cement, as provided for by the state program, is being implemented by the NIItstomproyekt /Scientific Research Institute for Building-Materials Planning/ (in the city of Tashkent).

The broad scope of the studies being carried out is testified to by the fact that they provide for the creation of more than 30 new technologies and about 20 new units of means of mechanization. In contrast to past years, the aim is not merely directed at conducting research but also at organizing industrial production during the 11th Five-Year Plan, based on most of the developments.

Implementing these programs will allow us to make an annual savings of about 150,000 tons of standard fuel, more than 200 million kW-hrs of electric power, lighten the work of 2,000 workers, expand the output of high-strength, forcing, decorative, plugging, and other types of cement, and to obtain an economic effect totaling 78 million rubles.

These tasks are quite complex: the state and sectorial programs for the cement industry include about 100 assignments, each of which constitutes an independent development. Taking part in carrying them out, along with the pilot institutes, are approximately 40 co-performing organizations. And so it was all the more important to coordinate and fine-tune the organization of this work, to conduct thorough planning of the operations with regard to the programs, and to monitor the deadlines which were set for carrying out these developments. For this purpose pilot institutes were set up for each program, financing of the projects was organized, coordinating councils were formed, and competent supervisors were appointed.

During this period of time certain assignments provided for by the programs were carried out already, although the principal results were planned for the end of the five-year plan.

NII tsement and the Perm Branch of the All-Union Scientific Research Institute of the Paper-and-Pulp Industry have developed a superplastifier, based on modified lignosulfonates--the LSTN-2. Adding it during the grinding of the cement increases the proportionate surface of the binder by 300--500 sq. cm per gram without reducing the productivity of the mills.

Utilizing Mark 550 Portland cement with LSTN-2 as an additive allows us to save from 10 to 14 percent of cement per cu. m of concrete, as compared with Mark 500 Portland cement, or it increases by an order of magnitude of 2--3 the workability of concrete mixes without reducing strength. The calculated economic effect derived from producing 1 ton of cement with this plastifier amounts to 1.0--1.5 rubles, and that derived from using it in construction ranges from 2 to 5 rubles. Industrial output of this superplastifier has been set up at one of the paper-and-pulp combines, which has put into operation a unit with a productivity of 10,000 tons of additive a year; this is sufficient for producing more than 2 million tons of binder. Use of LSTN-2 in cement production began in 1982 at the Sebyakovskiy Cement Plant and the Amvrosiyevskiy Cement Combine, where 100,000 tons of high-strength, Mark 550--600 cement have been produced with this superplastifier; its strength indicators have increased by 15--20 percent.

At the present time NII tsement is conducting projects with respect to improving the technical properties of superplastifiers, increasing the time period of their storage, improving their pumpability, and reducing their corrosiveness; also being developed are new superplastifiers using cheaper and more plentiful raw-material components.

In conjunction with the Southern Giprotsement and the Institute of Colloidal Chemistry and Water Chemistry of the Ukrainian SSR Academy of Sciences, the NII tsement has proposed synthetic mixes made of pre-calcined kaolins and waste products containing sulfuric acid or iron sulfate.

Within the framework of the program the first batches of such mixes will be developed at the experimental plants of NIItsement and Southern Giprotsement using the non-acidic and acidic methods, and they will be utilized at the Podolskiy Experimental Cement Plant and the Amvrosiyevskiy Cement Combine for turning out high-strength, Mark 550--600 cements. The heat outlays used to calcine kaolins for the mixes amount to approximately 25 percent of the theoretical outlays for clinker formation. In replacing 5--10 percent of the clinker by the mix, there will be a savings of about 75 percent of fuel (as calculated on the basis of the replaced portion of the clinker). The mixes are significantly softer than clinker; they intensify its grinding by 20--25 percent, and when the previous mark of cement is retained--by 35--40 percent, which allows us to reduce the expenditure of electric power.

Thus, the use of these mixes in the production of cements facilitates the increase of their strength without additional fuel-and-energy outlays under the conditions of the usual technology. A genuine possibility has manifested itself for obtaining high-strength cements, regardless of the quality of the raw materials used, and to approximate as closely as possible their production to the local consumption. The Podolskiy Experimental Cement Plant has turned out a batch of Mark 550 cement the obtaining of which using this enterprise's usual raw materials and existing technology would have been impossible.

NIItsement has worked out and introduced at the Shchurovskiy Cement Plant a new technology for whitening clinker by a combined method instead of water whitening. This has allowed them to remove the drying drum from the production line, considerably enhance the whiteness of the clinker, increase the output of Grade 2 white cement, and develop a Grade 1 cement. In 1983 the plant's profits increased by 450,000 rubles.

NIItsement has proposed and introduced at more than 100 mills a protective lining of furnaces with refractory materials with an alternating adhesion coefficient made of rolled elements. By means of its cheapness and increasing the time period of its operation an economic effect has been achieved which amounts to more than 3 million rubles a year.

Giprotsement has perfected a system of decarbonizing the ground material in a shaft-cyclone heat exchanger by means of burning gas in the shaft of Kiln No 3 at the Katav-Ivanovskiy Cement Plant. In 1983 at this kiln, with an additional burning of fuel, approximately 200,000 tons of clinker were produced, and a productivity of 51.4 tons of clinker per hour was achieved.

Projects have been conducted with regard to optimizing the calcining cycle at kilns of the Novospasskiy Cement Plant. Here disectors have been installed under the spouts of the cyclones, and the cooling unit has been equipped with a dividing screen. A system has been perfected for the pneumatic shifting and pneumatic transport of the ground, raw material and for feeding it into the rotary kiln.

Two-tiered silos have been recommended for the new production line of the Novokaragandinskiy Plant, and a new system has been installed for the continuous homogenization of the ground, raw material with the aid of pneumatic cassettes, developed and manufactured by Giprotsement's experimental plant.

Work has been completed with regard to improving and turning over for use the systems for homogenization and pneumatic transport of the ground, raw material at the fifth production line of the Krivorozhskiy Plant. As a result of this work, the guaranteed time period for the system of homogenization has been increased five-fold, while savings on electric power have reached the level of 2.5 kW-hrs. per ton of batch.

The Bezmeinskiy Cement Plant has put into operation two pneumatic batchers for the regulated feeding of ground, raw material from the disbursing silo directly into the kiln's heat exchanger. This has allowed them to reduce the outlay of electric power by 2 kW-hrs and that of compressed air--by 40 cu. tons of ground, raw material; furthermore, five service personnel were freed up.

Experiments have been completed on mastering the production of Mark 500 cement with the aid of a closed-circuit mill at the Novospasskiy Plant. Optimal operating cycles were worked out for the mill, ensuring that binder of this work would be obtained. The average productivity of this unit amounted to 90 tons per hour, the specific expenditure of electric power was 43.3 kW-hrs per ton, with a specific cement surface of 3500--4000 sq. cm per gram.

Within the development of the dry method of producing cement we should note the creation by Giprotsement of a mathematical model of the decarbonization process. An algorithm for calculating anytype of decarbonization has been developed and implemented within the program; it takes into account the type of fuel and the method of introducing it.

Projects were completed on tuning up and putting on the production line of the Savinskiy Cement Plant a grinding unit which included a mill for wet, independent grinding 7 X 23 meters in size and a pre-grinding mill 4 X 13.5 meters in size. Moreover, a planned productivity of 130 tons per hour was achieved, while technological regulation of the process of grinding raw material was likewise developed.

Giprotsement has carried out a project on improving the process of fuel combustion for the purpose of economizing on it at the "Aknyantsementas" PO [Production Association], where in December 1983 initial tests were completed by an inter-departmental commission on a regulated, two-channel, fuel-oil-type burner, manufactured by the "Volgotsemmash" Plant. In accordance with the results of these tests, the one-channel burner, as tested at Kiln No 5, was recommended for serial manufacture. It has been successfully operating practically without repairs over the course of 1.5 years with an initial air expenditure of 5--10 percent.

At the "Proletariy" Plant in a kiln measuring 5 X 185 meters a model of a GRTs KF gas-type burner was put into experimental-industrial operation; it has a system of remote-control ignition and control over turning off the burner jet, as developed within the framework of scientific and technical cooperation with Hungary.

For rotary kilns employing the dry method, a regulated fuel-oil-type burner without movable parts in the jet-nozzle section has been developed and tested. Successful operation of this unit at an increased temperature of the gas flow



and a small expenditure of initial air depends upon the fire-protective coating of its casing. Studies are being conducted on developing the composition of this coating and the technology for applying it to the burner casing.

At the "Punane Kunda" Plant the first experimental model of a regulated coal-dust burner was tested out; it permits a considerable reduction in the expenditure of the initial air, as well as a curtailment of the length of the burner jet. Working out its design and introducing it depends at the present time on the presence of a material which is in short supply--heat-resistant steel.

The principal efforts of Giprotsement with regard to the program for creating the radiational-chemical technology for obtaining cement were directed in 1983 at finishing up construction of an experimental unit with a calculated productivity of as much as 50 kg of clinker per hour, which was adopted by the State Commission. The total volume of the assimilated capital investments amounted to 761,800 rubles, including 522,600 rubles on construction-and-installation work and 213,500 rubles for equipment. The first few hundred kilograms of clinker have been obtained using this method. At the end of 1983 the tune-up of the ELV-6 accelerator and the basic assemblies of the semi-industrial plant were carried out. The engineering norms and regulations for obtaining clinker with an evaluation of its quality and various properties were worked out. In order to check up on the work capacity of the new, stream-type feeder provided for in this unit, Giprotsement developed and turned over for manufacture and testing the blueprints of the feeder model. In the first place, we should note the reliably installed effects of the radiation activation of the clinker formation: it has been experimentally proven that equal degrees of binding CaO are achieved under the influence of a bundle of accelerated electrons at lower temperatures (at 50--250°C), than in a rotary kiln.

Taking into account the high water mineralization of certain regions of our country, the staff members of Southern Giprotsement, as a result of comprehensive research studies and field tests, have worked out a low energy-consuming, sulfate-resistant, slag-type, portland cement, providing for the use of slags from the chemical industry. This binder is characterized by a higher coefficient of stability in corrosive environments than other types of cement; in contrast to the traditionally employed sulfate-resistant, portland cement, it hardens more intensively at higher temperatures. After lengthy hardening the strength of sulfate-resistant, slag-type, portland cement is greater than regular sulfate-resistant, portland cement of the same mark. It is characterized by a lowered exothermy, which is extremely important in making massive concretes, particularly for irrigational construction and under the conditions of a hot climate. Concretes based on sulfate-resistant, slag-type, portland cement stand up well under the alternate cycles of freezing and thawing, as well as excessive humidity and drying out.

The highly economical nature of producing this new type of cement is brought about by the decrease in the expenditure of the most energy-consuming component of cement--clinker. Because of this, the fuel consumption is reduced by 30 percent, while the cost of the concrete--because of the decrease in the outlays for its special protection--is reduced by 20--25 percent. For developing and introducing sulfate-resistant, slag-type, portland cement this group of specialists was awarded the prize of the USSR Council of Ministers for 1983.

With the aid of the Southern Giprotsment, the Lipetsk Cement Plant has introduced a new technology entitled R-calcining, which ensures a reduction of the specific outlay of heat for calcining clinker, as well as an increase in the productivity of the kiln unit, the activity of the clinker, and the durability of the refractory lining in the sintering zone by a factor of 1.5--2.

Use of this method stabilizes the thermal-engineering and engineering operational parameters of the kiln unit and eliminates clinker dust. Taking an active part in this work were staff members of the NKhTI [Moscow Chemical Technology Institute imeni D. I. Mendeleev]. They conducted comprehensive studies on the characteristics of clinker obtained using the R-calcining process, and they determined the role played by the forming, highly-reactive calcium oxide, which facilitates the creation of an unequally balanced structure of the clinker and a combination of the various stages in the process of clinker formation.

All this testifies to the fact that the work of this sector's science with respect to comprehensive scientific and technical programs has become more targeted and effective. Thus, at the present time the yield on each ruble invested in science has increased to 2.5 rubles. Success has been achieved at places where there is precise inter-action with other persons carrying out this work and where scientific leadership and a creative approach to the solution of scientific and technical problems multiply the business-like efficiency and the skillful administration of this complicated complex of operations.

But research on these comprehensive, targeted programs has also taught us another lesson. In places lacking in an innovative attitude toward the work, genuine motivation, follow-ups, and persistence, the assigned tasks have not been carried out. And, in contrast to years past, such disruptions were immediately noticed, since a breakdown even at only one stage caused an over-all delay in carrying out the entire schedule of operations.

Therefore, correct criticism was leveled at this sector's science in the article entitled "Imprisoned by Technical Conservatism" (PRAVDA, 24 May 1984). The contribution made by scientists to developing the dry method of producing cement is still insufficient, there are too few discoveries which could be the object of licenses, far from all developments by the institutes are being introduced, or they are done so merely on a limited scale.

The principal causes of the shortcomings and disruptions are, above all, the lack of coordination between the target programs and the production plans, design operations and capital construction, the lack of motivation and preparedness on the part of certain enterprises to introduce the results of research, violations of the construction deadlines for projects, and the lack of special raw materials.

Thus, the task provided by one of the state programs was the construction of a special unit for producing mixes. Serious difficulties arose in selecting a construction site, in providing the necessary capital investments for the work, and in delivering supplies of kaolin for our sector. In this connection an obvious lack of motivation has been manifested by the Ukrainian SSR Ministry of the Construction Materials Industry. There has not been enough persistent work

along these lines by the Southern Giprotsement--one of the creators of the technology for utilizing mixes. Moreover, putting this facility into operation would have allowed us to increase the output of high-strength binders by 400,000 tons per year and raise the grade level of more than 21 million tons of cement.

Deadlines have been disrupted with regard to the program for creating and introducing low-temperature (saline) technology. This task turned out to be much more complicated than it had previously seemed. NIIsromproyekt (in the city of Tashkent), having taken upon itself the functions of a general planner, developed multi-variant plans for modernizing the production lines of certain enterprises. But the new NTS [Low-Temperature (Saline)] technology was not introduced--this decision was influenced by the insufficient knowledge of cement production and the engineering possibilities of certain enterprises. Therefore, the USSR Ministry of the Construction Materials Industry adopted a resolution to retain the function of general planner for Giprotsement and the Southern Giprotsement, drawing in the NIIsromproyekt on sub-contracting principles. But in this case too the planning work was not speeded up. For example, it is impossible to introduce the new technology without the presence of chlorine-containing products--150 tons of them are required for every 1000 tons of alinite cement. In accordance with the contracts, only calcium chloride can be supplied to the plants, and even this in insignificant amounts. But its use, because of its high price and large grade category makes the NTS technology unprofitable. Enterprises of the Ministry of the Chemical Industry, Ministry of Mineral Fertilizer Production, and other ministries are not yet ready to deliver chlorine-containing waste products in accordance with direct economic ties, inasmuch as their additional processing is required. There has also been a delay in building an experimental-industrial facility for the desalinization of bischofite in Volgograd Oblast. On the other hand, projects of NTS technology are being built extremely slowly in the "Akhangarantsement" PO [Production Association], but, of course, it is on this that the scope of its further development in the sector depends. At the Sas-Tyubinskiy Plant the plan for the production of white cement turned out to be uncoordinated with the assigned task of introducing the NTS technology.

As experience has shown, the main thing consists in precisely organizing the carrying out of the programs--to allocate the assignments in due course to all those performing them, to show concern for the financing and material-technical support of the operations, to set up rigorous monitoring controls over the observance of the deadlines for carrying out the program stages, as well as coordinating them in a timely manner with all the sections of the production plan. And this must be done on a continuous basis rather than an ad hoc one.

Unfortunately, the existing structure of the central apparatus of the USSR Ministry of the Construction Materials Industry has not been adapted to such work; the absolute majority of its staff members are absorbed in current, day-to-day affairs, connected with carrying out production plans, and only an insignificant part of them on the middle level are concerned with developing future plans and with carrying out scientific and technical programs, as well as subject work with institutes.



The December (1983) Plenum of the CPSU Central Committee has obligated us to develop a program for the comprehensive improvement of the entire administrative mechanism. In carrying out this task, as applied to improving the structure of the central apparatus of the USSR Ministry of the Construction Materials Industry, it is important, above all, to think deeply about the system of administering scientific and technical progress.

No less important is the top-priority current and future planning of capital investments for speeding up scientific and technical progress. In the first phase we must plan the capital investments and planning operations with respect to re-tooling the sector, introducing new equipment and technology, along with carrying out projects provided for by the comprehensive, targeted programs. And only after completing the first phase should we proceed to plan capital investments for maintaining the existing capital production assets in order to ensure the steady operation of the enterprises. At the present time, unfortunately, just the opposite is being done.

Practical experience has shown that the comprehensive programs, worked out and operating first in this sector, are too multi-faceted. They include approximately 100 tasks, each of which is essentially an independent topic or development. Some research studies have yielded negative results, while others have proved to be insufficiently effective, which, in the author's opinion, is completely permissible because, of course, these programs differ from the plans in the following respect--at a given stage they can be closed down. Now, on the other hand, when the draft plan for the 12th Five-Year Plan provides for the conversion of certain operating enterprises to the dry and semi-dry methods of production (Sebryakovskiy, Topkinskiy, Araratskiy Plants, the "Spartak" Plant, and others) it is feasible to develop a comprehensive, targeted program for solving this problem.

It is necessary to reduce the number of topics included in the programs and to concentrate the efforts of this sector's science on solving the most urgent problems of developing the sector.

The cement industry has at its disposal an experimental base for checking out and working out under semi-industrial conditions individual technical innovations, engineering devices and methods for intensifying production. The sectorial institutes have experimental plants, as well as industrial-testing and experimental installations.

However, we are lacking an experimental base outfitted at the present-day level in the form of an industrial production line for the dry method of production. But, of course, development of this energy-conserving method is this sector's main direction. Based on such a production line, we could create, in conjunction with the Ministry of Construction, Road and Municipal Machine Building, a comprehensive design organization for working out experimental models of equipment, its individual units, and engineering processes. There are plans for creating such a base, and capital investments need to be allocated for this purpose in the 12th Five-Year Plan.

We often have occasion to hear the following: science has merely a weak influence on the growth of the cement industry's technical level. And, in the main, this is justified. But just why is it that, with their great scientific



potential and effective technical developments, the sectorial institutes indeed do have only a weak influence on increasing the effectiveness of the existing cement production? It is all a matter of the scale of introducing developments, or, as they say, of their "circulation."

But there is also another aspect of this question: is it fair to demand from the scientific institutes the mass introduction of their developments? To all appearances, the answer is no. Since this could only be done to the detriment of new developments and basic research, which comprises the foundation of the sector's future development.

The construction-materials industry is in need of a well-organized system for circulating the effective developments of the institutes, of a specialized organization for introducing new equipment and technology at cement plants. In my opinion, such an organization could be created at the base of Orgproyekttsenent /Cement Planning Organization/ and its branches, while in other sectors of the construction-materials industry--this could be done at bases of the orgtekhstoms /technical construction materials organizations/. And this could be accomplished without detriment to start-up and tune-up operations, since the engineering and technical staffs at enterprises are sufficiently strong, and today many of them are capable of carrying out such operations. The planning and organizational work performed by these organizations must obviously be handed over to the not overly burdened planning institutes of this sector.

In order to organize the mass introduction of new equipment and technology (developments of the institutes), the following tasks must be entrusted to the orgtekhstoms:

participation in receiving from the institutes completed developments at the pilot enterprises for their introduction;

working out plans for the mass introduction of innovations at the sector's enterprises with an indication of the deadlines involved;

concluding tripartite economic agreements among the orgtekhstom, the institute, and the enterprise;

preparing requests for the inclusion of developments in the topical plans of the planning institutes, plans for introducing new equipment, capital construction, and material-technical support, as well as, in case of necessity, the preparation of calculations for coordinating plans for the production and introduction of developments;

receiving, together with the enterprise, from the planning institute the plan-estimate documentation with regard to introducing developments;

conducting the main installation as well as start-up and tune-up operations;

carrying out comprehensive testing and turning over developments to the plant, at first for experimental and then for permanent operation;

reciprocal calculations among the enterprise, orgtekhstom, and institute for the fully completed introduction of developments.

At the present time these functions are dissipated, and their performance has not been precisely assigned to any one organization.

At the November (1982) Plenum of the CPSU Central Committee it was pointed out that we need to seek reserves for speeding up scientific and technical progress, for the broad-based and rapid introduction into production of the achievements of science, technology, and advanced experience.

Our sectorial science has great creative potential, which is based upon fundamental research, new energy-saving processes and technologies. It is precisely they which determine the future prospects and new paths for scientific and technical progress in the cement industry. To realize this potential within the framework of the targeted, comprehensive programs and to make it accessible to production is the most important task of the groups at institutes and enterprises, as well as the main administrations of the cement industry and the construction-materials ministries of the Union republics.

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